Precision Thin Film Chip Resistor
Anti-Sulfurated Type

AS73 Series

MERITEK

FEATURE

- Speical Materials, Design, and Processing for High Sulfur Applications
- Test Proven Immunity to Humidity, Mositure, and Sulfur
- Storage Temperature: 15~28°C; Humidity <80% R.H.
- Application: Automotive, medical equipment, testing/measurement equipment, printer equipment, automatic equipment controller, converters, communication device, cell phone, GPS, PDA

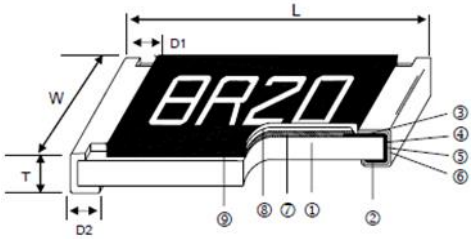
PART NUMBERING SYSTEM

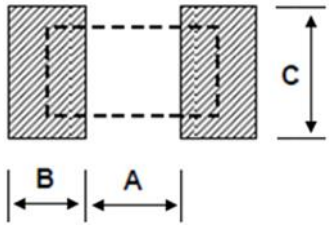
AS73 (1) F (2) 1J (3) TD (4) 49R9 (5) D (6)

RoHS

No	Item	Code	Description	Series Reference
(1)	**Meritek Series**	AS73	Precision Thin Film Chip Resistor	Anti-Sulfurated Type
(2)	**TCR**	F	F: ±25PPM/°C	C: ±10, D: ±15, G: ±50 PPM/°C
(3)	**Size Code**	1J	1J: 0603: 1.6x0.8mm	See dimensions table below
(4)	**Packaging**	TD	TD: Paper Tape (Reel)	TE: Plastic Tape (Reel)
(5)	**Resistance**	49R9	49R9: 49.9Ω	First three digits: significant, Fourth: Multiplier
(6)	**Tolerance**	D	D: ±0.5%	A: ±0.05%, B: ±0.1%, C: ±0.25%, F:±1%

DIMENSIONS AND LAND PATTERN RECOMMENDATION





Size	L (mm)	W (mm)	T (mm)	D1 (mm)	D2 (mm)	A (mm)	B (mm)	C (mm)	Weight (g/1000pcs)
1E (0402)	1.00±0.05	0.50±0.05	0.30±0.05	0.20±0.10	0.20±0.10	0.50	0.50	0.60±0.2	0.54
1J (0603)	1.55±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	0.80	1.00	0.90±0.2	1.83
2A (0805)	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.20	1.00	1.00	1.35±0.2	4.71
2B (1206)	3.05±0.15	1.55±0.15	0.55±0.10	0.42±0.20	0.35±0.25	2.00	1.15	1.70±0.2	9.02
2E (1210)	3.10±0.15	2.40±0.15	0.55±0.10	0.40±0.20	0.55±0.25	2.00	1.15	2.50±0.2	10
2H (2010)	4.90±0.15	2.40±0.15	0.55±0.10	0.60±0.30	0.50±0.25	3.60	1.40	2.50±0.2	23.61
3A (2512)	6.30±0.15	3.10±0.15	0.55±0.10	0.60±0.30	0.50±0.25	4.90	1.60	3.10±0.2	38.06

CONSTRUCTION

Item	Construction	Item	Construction	Item	Construction
1	Alumina Substrate	**4**	Edge Electrode	**7**	Resistor Layer
2	Bottom Electrode	**5**	Barrier Layer	**8**	Overcoat
3	Top Electrode	**6**	External Electrode	**9**	Marking

ELECTRICAL CHARACTERISTICS

Standard Rating Electrical Specification

Size	Power Rating at 70°C	Operating Temp. (°C)	Max Operating Voltage	Max Overload Voltage	Resistance (Ω)					TCR (PPM/°C)
					±0.05%	±0.1%	±0.25%	±0.5%	±1%	
1E (0402)	1/16W	-55~+155	25V	50V	49.9~10K	49.9~100K				±25, ±50
1J (0603)	1/16W	-55~+155	50V	100V	10~49.9K	10~332K				±25, ±50
2A (0805)	1/10W	-55~+155	100V	200V	10~100K	10~1M				±25, ±50
2B (1206)	1/8W	-55~+155	150V	300V	10~200K	10~1M				±25, ±50
2E (1210)	1/4W	-55~+155	150V	300V	10~499K	10~1M				±25, ±50
2H (2010)	1/4W	-55~+155	150V	300V	10~499K	10~1M				±25, ±50
3A (2512)	1/2W	-55~+155	150V	300V	10~499K	10~1M				±25, ±50

Special Rating Electrical Specification

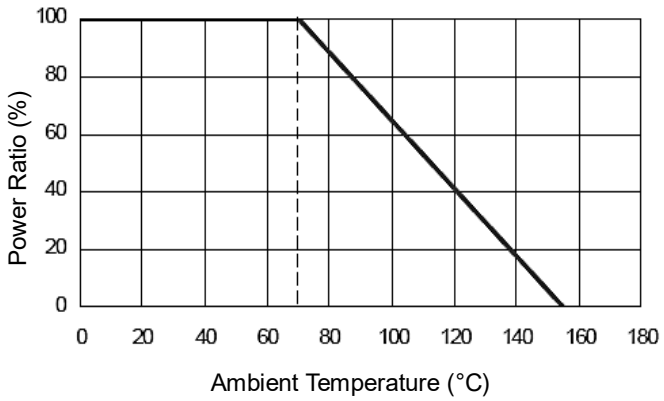
Size	Power Rating at 70°C	Operating Temp. (°C)	Max Operating Voltage	Max Overload Voltage	Resistance (Ω)					TCR (PPM/°C)
					±0.05%	±0.1%	±0.25%	±0.5%	±1%	
1E (0402)	1/16W	-55~+155	25V	50V	49.9~10K					±10
					49.9~10K	49.9~69.8K				±15
1J (0603)	1/16W	-55~+155	50V	100V	10~49.9K	10~332K				±10, ±15
2A (0805)	1/10W	-55~+155	100V	200V	10~100K	10~511K				±10
						10~1M				±15
2B (1206)	1/8W	-55~+155	150V	300V	10~200K	10~1M				±10, ±15
2E (1210)	1/4W	-55~+155	150V	300V	10~499K	10~1M				±10, ±15
2H (2010)	1/4W	-55~+155	150V	300V	10~499K	10~1M				±10, ±15
3A (2512)	1/2W	-55~+155	150V	300V	10~499K	10~1M				±10, ±15

Note:

1. Operating Voltage =$\sqrt{(P*R)}$ or Maximum operating voltage listed above, whichever is lower.
2. Overload Voltage =2.5*$\sqrt{(P*R)}$ or Maximum overload voltage listed above, whichever is lower.
3. Customized specifications might be available upon request, please contact Meritek for more information.

POWER DERATING CURVE

Power Derating Curve



RELIABILITY TEST CONDITION AND REQUIREMENT

Test	Standard	Condition	Requirement	
			Tol. ≦ 0.05%	Tol. > 0.05%
Temperature Coefficient of Resistance (T.C.R.)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	-55°C~+125°C, 25°C is the reference temperature	As Specified	
Short Time Overload	JIS-C-5201-1 4.13	2.5*RCWV or Max. overload voltage whichever is lower for 5 seconds	ΔR±0.05%	
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100 V_{DC} for 1 minute	>1000MΩ	
Operational Life	MIL-STD-202 Method 108	Condition D Steady State T_A=125°C at rated power. Measurement at 24±4 hours after test conclusion.	ΔR±0.05%	ΔR±0.2%
			>7KΩ ΔR±0.2%	
			ΔR±0.5% for high power rating	
Biased Humidity	MIL-STD-202 Method 103	1000 hours 85°C/85% RH 10% of operating power.	ΔR±0.1%	
High Temperature Exposure	MIL-STD-202 Method 108	155°C for 1000 hours	ΔR±0.2%	
Temperature Cycling	JESD22 Method JA-104	-55°C~+125°C, 1000 cycles	ΔR±0.1%	
Bending Strength (Board Flex)	JIS-C-5201-1 4.33	Bending once for 60 seconds. Bending displacement: 2010, 2512: 2mm Others: 3mm	ΔR±0.1%	
Solderability	JIS-C-5201-1 4.17 IEC-60115-1 4.17	245±5°C for 3 seconds	95% min. coverage	
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds	ΔR±0.05%	
Terminal Strength	AEC-Q200-006	Force of 1.8 kg for 60 seconds	No Broken	
Mechanical Shock	MIL-STD-202 Method 213	Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6.	ΔR±0.05%	ΔR±0.1%
Vibration	MIL-STD-202 Method 204	5g's for 20 min., 12 cycles each of 3 orientations, 10~2000 Hz.	ΔR±0.05%	ΔR±0.1%
ESD	AEC-Q200-002	Human body model 1E(0402), 1J(0603): 0.2KV 2A(0805), 2B(1206): 1KV 2F(1210), 2H(2010), 3A(2512): 2KV	ΔR±0.5%	
Resistance to Solvents	MIL-STD-202 Method 215	Add Aqueous wash chemical – OKEM Clean or equivalent. Do not use banned solvents.	Marking Unsmeared	
Sulfur Test	EIA-997 (Conditions B)	105±2°C no power rating for 750 hours	ΔR±1%	
Flammability	UL-94	V-0 or V-1 are acceptable. Electrical test not required.	No ignition of the tissue paper or scorching or the pinewood board.	

Note:
1. RCWV(Rated Continuous Working Voltage) = $\sqrt{(P*R)}$ or Max operating voltage whichever is lower
2. Storage Temperature: 15~28°C; Humidity < 80%RH

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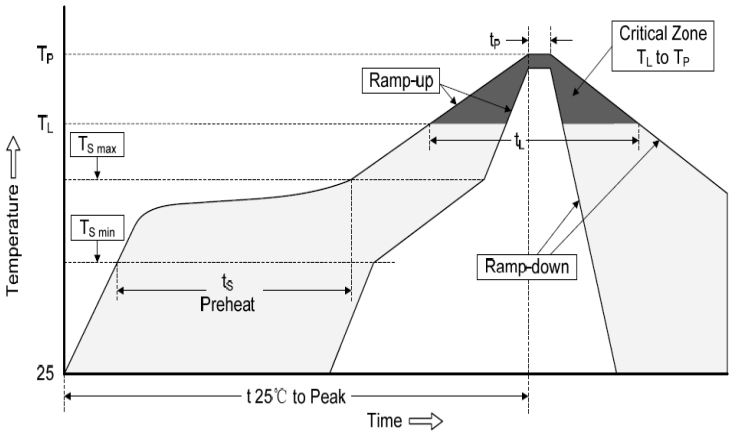
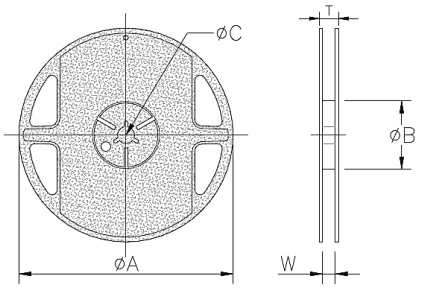
SOLDERING RECOMMENDATION

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	180°C
	Time (min. to max.) (t_s)	90s ~ 120s
Average ramp up rate (T_L) to peak		3°C/s max.
$T_{s(max)}$ to T_L (Ramp-up rate)		3°C/s max.
Reflow	Temp. (T_L)	220°C
	Time (min. to max.) (t_L)	60s max.
Peak Temperature (T_P)		265°C
Time within 5°C of T_P (t_p)		10s
Ramp-down Rate		6°C/s

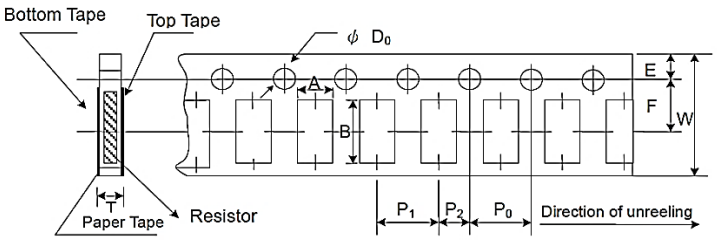


PACKAGING SPECIFICATIONS

Reel Specification & Packaging Quantity



Paper Tape Specification



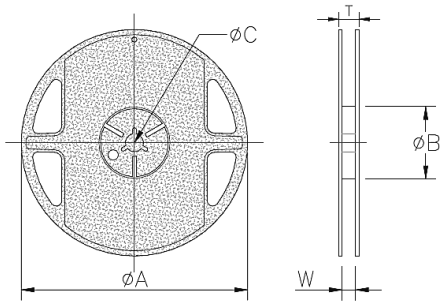
Size	Reel Dimension (mm)							
	Quantity	Tape Width	Reel Diameter	ϕA	ϕB	ϕC	W	T
0402	Paper 10K	8mm	7”	178.0±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0
0603 0805 1206 1210	Paper 5K	8mm	7”	178.0±1.0	60±1.0	13.5±0.7	9.5±1.0	11.5±1.0

Size	Paper Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
0402	0.70±0.05	1.16±0.05	8.0±0.1	1.75±0.05	3.5±0.05	4.0±0.1	2±0.05	2±0.05	1.55±0.05	0.40±0.03
0603	1.10±0.05	1.90±0.05	8.0±0.1	1.75±0.05	3.5±0.05	4.0±0.1	4±0.10	2±0.05	1.55±0.05	0.60±0.03
0805	1.60±0.05	2.37±0.05	8.0±0.1	1.75±0.05	3.5±0.05	4.0±0.1	4±0.10	2±0.05	1.55±0.05	0.75±0.05
1206	2.00±0.05	3.55±0.05	8.0±0.1	1.75±0.05	3.5±0.05	4.0±0.1	4±0.10	2±0.05	1.55±0.05	0.75±0.05
1210	2.75±0.05	3.40±0.05	8.0±0.1	1.75±0.05	3.5±0.05	4.0±0.05	4±0.10	2±0.05	1.60±0.10	0.75±0.05

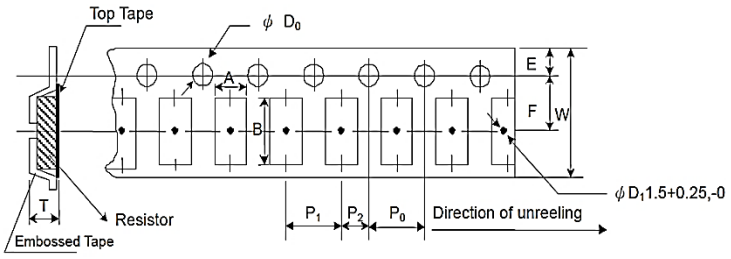
Notes: Peel force of top cover tape, Peel speed:300mm/min ±5%, Peel force of top cover tape:between 8gf to 60gf

PACKAGING SPECIFICATIONS

Reel Specification & Packaging Quantity



Plastic Tape Specification



Size	Reel Dimension (mm)							
	Quantity	Tape Width	Reel Diameter	ϕA	ϕB	ϕC	W	T
2010 2512	Plastic 4K	12mm	7”	178.0±1.0	60±1.0	13.5±0.7	13.5±1.0	15.5±1.0

Size	Plastic Tape Dimension (mm)									
	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
2010	2.85±0.1	5.45±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20
2512	3.40±0.1	6.65±0.1	12.0±0.1	1.75±0.1	5.5±0.05	4.00±0.05	4.00±0.10	2.00±0.05	1.50+0.10	1.00±0.20

Notes: Peel force of top cover tape, Peel speed:300mm/min ±5%, Peel force of top cover tape:between 20gf to 80gf

*Specifications subject to change without notice.